



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/809,030	03/16/2001	Yuval Ben-Itzhak	58525.00004.UTL1	5590
36183	7590	09/08/2006	EXAMINER	
PAUL, HASTINGS, JANOFSKY & WALKER LLP			JACKSON, JENISE E	
P.O. BOX 919092			ART UNIT	
SAN DIEGO, CA 92191-9092			PAPER NUMBER	
			2131	

DATE MAILED: 09/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/809,030	Applicant(s) BEN-ITZHAK, YUVAL	
	Examiner Jenise E. Jackson	Art Unit 2131	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5-10, 13, 14, 17-19, 23-24, 44-45 is/are allowed.
- 6) ☒ Claim(s) 1-4, 11, 12, 15, 16, 20-22, 25-33, 36-43 and 46-54 is/are rejected.
- 7) ☒ Claim(s) 34 and 35 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 11-12, 15-16, 20-22, 25-33, 36-43, 46-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over BRP publications in view of Reshef et al(6,584, 569).

3. As per claim 1, BRP publications teaches a method for protecting an application from executing an illegal or harmful operation request received from a distrusted environment, BRP teaches this, because BRP teaches that Appshield, protects the integrity of an e-commerce application by making it nearly impossible for hackers to use traditional security loopholes, either in the application code or web servers(see lines 27-29). Also, BRP publications teaches determining whether said operation request is illegal or harmful to an environment of said application according to security settings designated for the application path, and preventing an application from executing an illegal or harmful operation request, because Appshield rejects unexpected, illegal inputs, generating an error page for the user and notifying the management(see lines 30-33). BRP/Appshield teaches matching an operation request to the application path is a represented as a virtual directory of the application(see lines 22-26). BRP does not disclose designating an application path of an application as restricted. Reshef discloses designating an application path of an application as restricted (see col. 3, lines 60-67). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the

Art Unit: 2131

application path of the application restricted with BRP publications, the motivation is that the detection phase searches for application path parameters in order to check for a vulnerability (see col. 3, lines 60-67).

4. As per claim 2, BRP publications discloses wherein the illegal and harmful operation request causes damage, because Appshield is designed to protect applications from illegal operations(see lines 27-31). BRP publications teach that these illegal operations are performed by hackers(see lines 27-31). Also, BRP publications teach that hackers threaten the effectiveness of Internet transactions (see lines 1-5). BRP teaches that a hacker could fraudulently change the prices on a particular item online and purchase it at that price, he could tape into secret medical records; or access private passwords to log on to information on a site(see lines 6-11). The Examiner asserts that these are all illegal and harmful operations that cause damage.

5. As per claim 3, BRP publications teaches wherein said illegal and harmful operation request is database manipulation, because BRP teaches that an hacker could access private passwords to log on to a particular site(see lines 7-9).

6. As per claim 4, BRP publications teaches wherein said step of preventing includes the step of rejecting said illegal or harmful operation request, Appshield prevents illegal or harmful operation request, by rejecting them, because BRP publications teaches Appshield rejects unexpected, illegal inputs(see lines 30-32).

7. As per claim 11, BRP publications does teaches the following limitations; however, Reshef discloses wherein said step of determining comprises the steps of: comparing said operation request against stored known vulnerability patterns to determine a match; and blocking said operation request if said match is found(see col. 4, lines 9-32, col. 8, lines 36-51). It would

Art Unit: 2131

be obvious to one of ordinary skill in the art at the time of the invention to include comparing the operation request against stored known vulnerability patterns and blocking, the motivation is that application level vulnerabilities have traditionally been discovered and reviewed by developers; who have to review the application line-by-line and understand the code to try to imagine or anticipate potential security loopholes(see col. 1, lines 62-67, col. 2, lines 1-13 of Reshef).

Developers lack the expertise and knowledge to evaluate security flaws, and applications are constantly changing. Therefore, Reshef discloses a scanner that detects security vulnerabilities in applications, and stores the vulnerabilities and updates(see col. 4, lines 9-32).

8. As per claim 12, BRP publications does not teach the following limitations; however, Reshef discloses the step of: updating said stored vulnerability patterns with newly found vulnerability patterns(see col. 8, lines 36-46). It would be obvious to one of ordinary skill in the art at the time of the invention to include updating the stored vulnerability patterns with newly found vulnerability patterns of Reshef with BRP publications, the motivation is that application level vulnerabilities have traditionally been discovered and reviewed by developers; who have to review the application line-by-line and understand the code to try to imagine or anticipate potential security loopholes(see col. 1, lines 62-67, col. 2, lines 1-13 of Reshef). Developers lack the expertise and knowledge to evaluate security flaws, and applications are constantly changing. Therefore, Reshef discloses a scanner that detects security vulnerabilities in applications, and stores the vulnerabilities and updates(see col. 4, lines 9-32 Reshef).

9. As per claim 15, BRP publications does not teach the following limitations; however, Reshef discloses dividing said operation request into four zones(see col. 8, lines 1-7); comparing each of said four zones against stored known vulnerability patterns to determine a match; and

Art Unit: 2131

blocking said operation request if said match is found(see col. 6, lines 1-12, col. 9, lines 32-53).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the four zones of Reshef with BRP publications; the motivation is that these four zones of Reshef are used to detect hacking of applications (see col. 3, lines 60-67, col. 4, lines 1-8, col. 7, lines 51-67).

10. As per claim 16, BRP publications does not teach the following limitations; however, Reshef discloses wherein said four zones represent a URI, query string, header, and body associated with said operation request(see col. 6, lines 1-12, col. 8, lines 1-7, col. 9, lines 32-53). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the four zones of Reshef with BRP publications, the motivation is that these four zones of Reshef are used to detect hacking of applications (see col. 3, lines 60-67, col. 4, lines 1-8, col. 7, lines 51-67).

11. As per claim 20, BRP publications does not teach designating an application path of the application restricted; determining a destination of the operation request; and blocking the operation request if the destination is equal to designated path, Reshef discloses designating an application path of the application restricted; determining a destination of the operation request; and blocking the operation request if the destination is equal to designated path(see col. 8, lines 61-67, col. 9, lines 1-3, 31-53). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the application path of the application restricted with BRP publications, the motivation is that the detection phase searches for application path parameters in order to check for a vulnerability (see col. 3, lines 60-67).

Art Unit: 2131

12. As per claim 21, BRP publications does not teach the following limitations; however, Reshef discloses compiling a list of acceptable operation requests; and comparing said operation request to said list of acceptable operation requests(see col. 4, lines 15-19, col. 8, lines 36-51). It would have been obvious to one of ordinary skill in the art at the time of the invention to include a compiling list of acceptable operations request from Reshef with BRP publications, the motivation is that the scanner of Reshef includes predefined rules which are used to create http requests based on vulnerabilities with platforms that can be employed at the web application (see col. 4, lines 8-19 of Reshef).

13. As per claim 22, BRP publications is silent on the following limitations; however, Reshef discloses determining a parameter value contained within said operation request(see col. 3, lines 44-54); and applying a pre-defined rule to said parameter based on said parameter type, wherein said pre-defined rule defines one or more acceptable parameter values(see col. 3, lines 60-67, col. 4, lines 1-19). It would have been obvious to one of ordinary skill in the art at the time of the invention to include determining a parameter value contained within the operation request of Reshef with BRP publications, the motivation is that the scanner can dynamically traverse the web application to examine the attributes of the path and data parameters for hackers modifying input fields(see col. 3, lines 44-66).

14. As per claim 25, BRP publications does not teach the following limitations; however, Reshef discloses storing said plurality of operation requests into a virtual directory(see col. 8, lines 13-20); building a dynamic range of entered values for each parameter in said plurality of operation requests(see col. 8, lines 61-67, col. 9, lines 1-3, col. 10, lines 1-20); computing an acceptable range of values for each parameter based on a statistical model applied to said

Art Unit: 2131

dynamic range of entered values for each value(see col. 10, lines 1-35, 56-60); receiving a subsequent operation request; identifying parameter values in said subsequent operation request; and determining if said parameter values in said subsequent operation request are within said acceptable range of values(see col. 8, lines 61-67, col. 9, lines 1-3). It would have been obvious to one of ordinary skill in the art at the time of the invention, to include adding parameter values in subsequent operation request to dynamic range, the motivation is that the mutated requests can be initiated during the attack stage to evaluate the real threat that the potential vulnerabilities pose(see col. 10, lines 40-48 of Reshef et al.).

15. As per claim 26, BRP publications does not teach including the steps of: adding said parameter values in subsequent operation request to dynamic range; adjusting said acceptable range of values for each parameter by applying said statistical model. However, Reshef et al. discloses adding said parameter values in subsequent operation request to dynamic range; adjusting said acceptable range of values for each parameter by applying said statistical model(see col. 9, lines 60-67, col. 10, lines 1-48). It would have been obvious to one of ordinary skill in the art at the time of the invention, to include adding parameter values in subsequent operation request to dynamic range, the motivation is that the mutated requests can be initiated during the attack stage to evaluate the real threat that the potential vulnerabilities pose(see col. 10, lines 40-48 of Reshef et al.).

16. As per claim 27, BRP publications does not teach the following limitations below; however, Reshef et al. discloses receiving one or more operation requests; formatting each operation request into a formatted message according to designated protocol, wherein the designation communication protocol is determined by the type of application being requested;

Art Unit: 2131

indexing the one or more formatted messages(see col. 3, lines 44-58); translating the formatted messages into internal messages according to an encoding scheme, resolving a destination node for each operation request; storing a copy of the indexed one or more formatted messages(see col. 3, lines 60-67, col. 4, lines 1-8); applying one or more pipes to each operation request, wherein the number and types of pipes applied to each operation request are based on said resolved destination node of each operation request(see col. 4, lines 1-30). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine BRP with Reshef, both teaches protecting an application from hackers, the motivation to protect application from hackers is that a hacker can alter a parameter in an http request, and freeze the application (see col. 4, lines 1-8). Also, Newly added limitations have already been addressed(see claim 1).

17. As per claim 28, BRP publications teaches wherein the designated communications protocol is http(see lines 22-31).

18. As per claim 29, BRP publications inherently teaches wherein said encoding scheme is ASCII, because BRP publications teaches http application protocol(see lines 22-31), http uses ASCII.

19. As per claim 30, it is rejected under the same basis as claim 9. Further, the application of the pipe of Reshef is the scanner(see col. 44-53).

20. As per claim 31, it is rejected under the same basis as claim 10.

21. As per claim 32, it is rejected under the same basis as claim 11.

22. As per claim 33, it is rejected under the same basis as claim 12.

23. As per claim 48, BRP publications teaches a system for implement an application layer security layer between a trusted application and a distrusted computer environments including

Art Unit: 2131

means for receiving an operation request for the application (see lines 16-19); means for embedding the operation request into a data format used by the trusted application (see lines 30-33), and means for checking a contents of the operation requests to identify if the operation request is illegal or harmful to an environment of the application(see lines 27-29). BRP publications does not disclose illegal or harmful to an environment of the application that consists of uniform resource identifier. However, Reshef et al. discloses wherein the illegal or harmful request consists of uniform resource identifier (see col. 6, lines 1-12, 49-56). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the uniform resource identifier, the motivation is that online theft is one vulnerability that a hacker can change the purchase price by changing the value of the parameter in the http request, thus by checking a uniform resource identifier online theft can be prevented (see col. 7, lines 51-67).

24. As per claim 49, BRP publications teaches wherein said data format is selected from HTTP(see lines 22-31).

25. As per claim 50, BRP publications inherently discloses wherein said receiving means is a queued socket server, because BRP publications teaches that e-commerce applications are protected from hackers, e-commerce use socket server to protect data(see lines 22-29).

26. As per claim 54, BRP publications teaches means for providing a firewall, is inherent in BRP, because BRP teaches that Appshield teaches a policy recognition engine(see lines 22-24). Also, BRP publications teaches that Appshield recognizes the intended application security policy by analyzing each outbound hypertext markup language page, and enforces compliance with the policy for each incoming application(see lines 22-26).

27. As per claim 36, it is rejected under the same basis as claim 15.

Art Unit: 2131

28. As per claim 37, it is rejected under the same basis as claim 16.
29. As per claim 38, it is rejected under the same basis as claim 17.
30. As per claim 39, it is rejected under the same basis as claim 18.
31. As per claim 40, it is rejected under the same basis as claim 19.
32. As per claim 41, it is rejected under the same basis as claim 20.
33. As per claim 42, it is rejected under the same basis as claim 21.
34. As per claim 43, it is rejected under the same basis as claim 22.
35. As per claim 46, it is rejected under the same basis as claim 25.
36. As per claim 47, it is rejected under the same basis as claim 26.
37. As per claim 51, limitations have already been addressed (see claim 27).
38. As per claim 52, it is rejected under the same basis as claim 49.
39. As per claim 53, it is rejected under the same basis as claim 29.
40. As per claims 5-10, 17-19 are allowable, because prior art nor non-patent literature disclose or teach, modifying the illegal or harmful operation into a legal or harmless operation, because the prior art discloses that when an illegal or harmful operation is detected it is analyzed and logged, does not disclose modifying the operation to a legal request.
41. As per claims 13-14, are allowable, because the prior art discloses that when an illegal or harmful operation is detected it is analyzed and logged, does not disclose modifying the operation to a legal request. Claims 34-35 are objected to, because base claims rejected. Claims are allowable because of computing a hash value for every consecutive specified number of character in the operation request, and comparing every has value to stored hash values. Prior art nor non-patent literature discloses computing hash values for a number of characters, the prior

Art Unit: 2131

art discloses looking for parameters and checking for tampering of the application, not computing a hash value for the characters.

42. As per claims 23-24 are allowable. Claims 44-45 are allowable, because base claims rejected. Claims are allowable because of decrypting values in the cookie message header and modifying the operation request to reflect the decrypted values. Prior art fails to disclose these limitations. An example of prior art that does not disclose these is Reshef. Reshef discloses cookie values are checked to see if they have been manipulated. Non-patent literature teaches cookie poisoning, which a hacker can take on another's identity online. However, prior art fails to disclose the limitations above.

Response to Amendment

43. The Applicant states that the reasons to combine BRP and Reshef are improper.

44. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, BRP does not disclose designating an application path of an application as restricted; however, Reshef discloses designating an application path of an application as restricted (see col. 3, lines 60-67). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the application path of the application restricted with BRP publications, the motivation is that the detection phase searches for application path parameters in order to check

Art Unit: 2131

for a vulnerability (see col. 3, lines 60-67). The Applicant states that Reshef et al. does not disclose designating an application of an application as restricted. The Examiner disagrees with the Applicant. Reshef discloses a detection phase, the detection phase searches through the application interface structure, and using a set of detection rules identifies application level messages that may be potentially vulnerable (see col. 3, lines 60-67).

45. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

46. The Applicant states that Reshef's scanner only identifies vulnerabilities and does not prevent those vulnerabilities from being exploited by hackers. Appshield was used to reject the "preventing limitation", not Reshef. Appshield teaches preventing an application from executing an illegal or harmful operation request, because Appshield rejects unexpected, illegal inputs, generating an error page for the user and notifying the management(see lines 30-33).

47. The Applicant states that BRP does not disclose a trusted environment. Claim 1, discloses a trusted environment; however, it is disclosed in the preamble. The preamble holds no patentable weight. Thus, argument is moot.

48. The Applicant states that Reshef does not disclose designating an application path. The Examiner disagrees with the Applicant. Reshef discloses the scanner examines the application-level messages that flow between a web server hosting a web-based application and a client browser operating in an intended or authorized way(see col. 3, lines 44-49). This enables the

Art Unit: 2131

scanner to discover the structure or elements of the application's interface with external clients, particularly the path and data parameters employed in the interface(see col. 3, lines 44-59).

49. The Applicant states that Appshield nor Reshef disclose matching an operation request to the application path, wherein the application path is a virtual directory or subdirectory of the application, according to security settings designated for the application path(see lines 22-26).

The Examiner disagrees with the Applicant. Appshield teaches, recognizing the intended application security policy by analyzing each outbound hypertext markup language pages. Then it enforces compliance with the policy for each incoming hypertext transfer protocol application(HTTP).

Final Action

50. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Art Unit: 2131


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jenise E. Jackson whose telephone number is (571) 272-3791.

The examiner can normally be reached on M-Th (6:00 a.m. - 3:30 p.m.) alternate Friday's.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


September 1, 2006

